

What is claimed is:

1. A magneto-resistance effect element comprising:
a magnetization free layer which has two opposed main surfaces, one of which is set to be generally parallel to an air bearing surface;
an intermediate layer which is formed on an opposite side face of the magnetization free layer from a medium to come in contact with the magnetization free layer; and
a pair of magnetization pinned layers which are formed on an opposite side face of the intermediate layer from the magnetization free layer to come in contact with the intermediate layer and extend outwardly,
wherein a sense current flows from one magnetization pinned layer to the other magnetization pinned layer through the magnetization free layer.
2. The magneto-resistance effect element according to claim 1, wherein the magnetization pinned layer is connected with an electrode for a sense current.
3. The magneto-resistance effect element according to claim 1, wherein the magnetization pinned layers are larger in area than the magnetization free layer.
4. The magneto-resistance effect element according to claim 2, wherein connection positions of the magnetization free layer and the magnetization pinned layers are spaced 10nm or more from connection positions of the magnetization pinned layers and the electrode for a sense current.
5. The magneto-resistance effect element according to claim 1, wherein anti-ferromagnetic layers are formed on opposite side faces of the magnetization pinned layers from the intermediate layer.

6. The magneto-resistance effect element according to claim 1, wherein a junction face of the magnetization free layer joining the pair of magnetization pinned layers via the intermediate layer is inclined to the air bearing surface.
7. The magneto-resistance effect element according to claim 6, wherein the junction face is inclined to the air bearing surface at about 90° .
8. The magneto-resistance effect element according to claim 7, wherein the film thickness of the magnetization free layer is thicker than those of the magnetization pinned layers.
9. The magneto-resistance effect element according to claim 1, wherein the intermediate layer is formed on only a junction face of the magnetization free layer and the magnetization pinned layers.
10. The magneto-resistance effect element according to claim 1, wherein a groove is provided between the pair of magnetization pinned layers, and a direction extending along the groove and a magnetization direction of the magnetization pinned layers cross generally perpendicularly to each other.
11. The magneto-resistance effect element according to claim 1, wherein a groove is provided between the pair of magnetization pinned layers, and a direction extending along the groove and a magnetization direction of the magnetization pinned layers are generally parallel to each other.
12. The magneto-resistance effect element according to

claim 1, further comprising a first oxide layer formed on the air bearing surface of the magnetization free layer directly or via a layer comprising any one of Au, Ag and Cu, or an alloy layer of any one of Au, Ag and Cu, wherein the first oxide layer has an electron reflection effect.

13. The magneto-resistance effect element according to claim 12, further comprising a second oxide layer with an electron reflection effect which is formed on the opposite side main surface of the magnetization free layer from the air bearing surface.

14. The magneto-resistance effect element according to claim 13, further comprising a third oxide layer with an electron reflection effect which is provided on a face on which the intermediate layer of the magnetization pinned layers except for junction portion of the magnetization free layer and the magnetization pinned layers is formed.

15. The magneto-resistance effect element according to claim 1, wherein the magnetization free layer has a stacked structure in which multi-layers including an oxide layer with an electron reflection effect are stacked.

16. The magneto-resistance effect layer according to claim 1, wherein magnetization directions of the magnetization free layer and the magnetization pinned layers cross generally perpendicularly to each other.

17. The magneto-resistance effect layer according to claim 1, wherein the width of the magnetization free layer is generally coincident with a recording track width.

18. A reproducing head comprising a magneto-resistance effect element according to claim 1, wherein a distance between an air bearing surface of the head and a bottom face of the magnetization free layer is 30nm or less.

19. A reproducing head comprising a magneto-resistance effect element according to claim 1, wherein the length of the magnetization free layer is within three times the shortest bit length in a track direction of the medium.